

Title (en)

Methods and compositions for reducing wear in heavy-duty diesel engines

Title (de)

Verfahren und Zusammensetzungen zur Reduzierung des Verschleisses in Hochleistungsdieselmotoren

Title (fr)

Procédés et compositions pour réduire l'usure dans les moteurs diesel à grande puissance

Publication

EP 1454977 B1 20101229 (EN)

Application

EP 04251201 A 20040302

Priority

US 38342603 A 20030307

Abstract (en)

[origin: EP1454977A2] Disclosed are methods and lubricant compositions for reducing wear in heavy-duty diesel engines. The lubricant compositions disclosed herein comprise a combination of an anti-wear effective amount of a dispersed, hydrated alkali metal borate, a neutral sulfonate and an overbased detergent composition.

IPC 8 full level

C10M 163/00 (2006.01); **C10M 169/04** (2006.01); **C10M 125/26** (2006.01); **C10M 129/10** (2006.01); **C10M 135/10** (2006.01); **C10M 159/18** (2006.01); **C10M 159/20** (2006.01); **C10N 10/02** (2006.01); **C10N 10/04** (2006.01); **C10N 10/12** (2006.01); **C10N 30/04** (2006.01); **C10N 30/06** (2006.01); **C10N 40/25** (2006.01)

CPC (source: EP US)

C10M 163/00 (2013.01 - EP US); **C10M 2201/087** (2013.01 - EP US); **C10M 2207/028** (2013.01 - EP US); **C10M 2215/28** (2013.01 - EP US); **C10M 2219/044** (2013.01 - EP US); **C10M 2219/046** (2013.01 - EP US); **C10M 2223/045** (2013.01 - EP US); **C10M 2227/09** (2013.01 - EP US); **C10N 2010/02** (2013.01 - EP US); **C10N 2010/12** (2013.01 - EP US); **C10N 2030/04** (2013.01 - EP US); **C10N 2030/06** (2013.01 - EP US); **C10N 2040/252** (2020.05 - EP US)

Cited by

EP1935970A1; GB2474986A; GB2474986B; US7981846B2; WO2011051261A1; WO2007075531A3

Designated contracting state (EPC)

DE FR GB NL

DOCDB simple family (publication)

EP 1454977 A2 20040908; **EP 1454977 A3 20071226**; **EP 1454977 B1 20101229**; CA 2459104 A1 20040907; CA 2459104 C 20130416; DE 602004030737 D1 20110210; JP 2004269888 A 20040930; JP 4778200 B2 20110921; SG 110087 A1 20050428; US 2004176257 A1 20040909; US 6841521 B2 20050111

DOCDB simple family (application)

EP 04251201 A 20040302; CA 2459104 A 20040227; DE 602004030737 T 20040302; JP 2004063088 A 20040305; SG 200401489 A 20040227; US 38342603 A 20030307